

REMARKS**Introduction**

The present application has been carefully studied and amended in view of the outstanding Office Action dated December 22, 2009, and reconsideration of that Action is requested in view of the following comments.

Status of claims

Claims 1 to 4, 6 and 7 are pending in the application.

Claims 1, and 3 to 4 have been currently amended.

Claim 1 has been amended by incorporating the condensation temperature range (from page 5, fourth paragraph, lines 1 and 2, and line 7, of the specification) and by incorporating the nature of the polyester resin **B** as being hydrophobic, taken from page 1, first paragraph under "Summary of the Invention", line 3, the choice of the alcohols **B1** as being dihydric aliphatic alcohols, and the choice of acids **B2** as being aliphatic mono- or dibasic dicarboxylic acids, as disclosed in page 4, third and fourth paragraphs beginning with "**B1** ...", and ending with "... 40 carbon atoms." of the specification, and by inserting the characteristic that the aliphatic monocarboxylic acids are fatty acids, taken from page 5, first paragraph, second last line, of the specification.

Claims 3 and 4 have both been amended by correcting their dependence on claim 2 instead of claim 1.

Claim 5 has been cancelled.

It is deemed that no new matter has been added by such amendments. It is also deemed that no further search or consideration will be necessitated by these amendments, and entry thereof is therefore respectfully requested.

The Office Action

Rejection 35 U. S. C. § 112 , second paragraph

Claims 3 and 4 have been rejected due to insufficient antecedent basis. The dependence of these claims has been corrected to depend on claim 2 rather than claim 1. It is deemed that by this amendment, this ground of rejection has been rendered moot.

Rejection under 35 U. S. C. 102 (b)

Claims 1 to 3, and 5 of the present application have been rejected under 35 U. S. C. § 102 (b) over Kadambande US 6,627,700 B2.

This reference is directed to an aqueous dispersion of an acrylate-grafted alkyd resin. This dispersion is made by the following process:

in a first step, dispersing an alkyd resin having a mass fraction of from 0.1 % to 10 % of chain-pendant or terminal allyloxy groups,

in a second step, graft-copolymerising a mixture of methacrylic acid and at least one further carboxyl-free olefinically unsaturated monomer in the presence of the dispersion of the first step, and

in the third, and optionally further, steps, subjecting at least one olefinically unsaturated monomer which is free from acid groups, or a mixture of at least one olefinically unsaturated monomer which contains acid groups, and at least one

olefinically unsaturated monomer which is free from acid groups, to graft copolymerisation in the dispersion formed in the preceding step.

There is no mention in Kadambande that a preformed copolymer **A** containing acid groups, of olefinically unsaturated monomers, is condensed with a hydroxyl-group containing polyester **B** derived from aliphatic dibasic and monobasic carboxylic acids, at a temperature of from 100 °C to 220 °C. The polymers of Kadambande are the commonly known graft copolymers, having an alkyd main chain, and graft branches from olefinically unsaturated monomers, which are connected to the polymer main chain via carbon-carbon bonds, as is usual in such graft polymerization reactions. The condensation resins **AB** of the present invention are, however, connected by an ester bond formed under formation of water, in the condensation reaction between the hydroxyl-group containing polyester, **B**, and the acid groups-containing polymer **A**.

Kadambande therefore does not anticipate the subject matter as particularly pointed out and distinctly claimed in independent claim 1 of the present application, and the other claims dependent thereon. Withdrawal of this ground of rejection is therefore respectfully requested.

Rejection under 35 U. S. C. 103 (a)

Claims 1 to 7 have been rejected under 35 U. S. C. 103 (a) as being unpatentable over the Dworak et al. US 2002/0 077 389 A1 ("Dworak").

Dworak discloses an aqueous binder mixture that comprises a water-dilutable resin and a water-miscible hydroxyurethane. See col. 1, paragraph [0005]. The water-dilutable resins are condensation products of acid functional resins **A** and

hydroxy-functional resins **B**. The acid functional resin **A** may be an acrylic copolymer, and the hydroxy-functional resin **B** may be a hydroxy-functional polyester. However, it is not disclosed in Dworak that the polyester **B** is hydrophobic, and that one mandatory component is a monofunctional aliphatic carboxylic acid which is a fatty acid.

In the present invention, the object is to provide dispersing agents for water-dilutable pigments concentrates that overcome the disadvantage of coatings made with pigment dispersing agents of the prior art, which coatings have unsatisfactory water resistance.

It can be seen (see Table 8, result for Example E1) that the water resistance is improved when a hydrophobic polyester resin **B** is used as a component of the condensation products **AB**, and also an improvement in both corrosion resistance tests (humidity cabinet and salt spray test) was found.

This could not have been expected from Dworak which only deals with increasing the mass fraction of solids in primer surface formulations, and does not provide a teaching, motivation, or suggestion to introduce the features as now particularly pointed out and distinctly claimed in claims 1 to 4, and 6 to 7 of the instant application, and thereby arrive at the advantageous properties provided by the method of use as claimed.

It is therefore deemed that this ground of rejection has been rendered moot by the amendments and arguments presented in support of patentability.

Claims 1 to 6 also stand rejected under 35 U. S. C. 103 (a) as rendered obvious by Buter US 2002/0 016 407 A1.

The rejection is also respectfully traversed.

Buter is directed to a an aqueously dispersed polyester-polyacrylate hybrid resin combined with an organic polyisocyanate, wherein the polyester-polyacrylate hybrid resin is synthesized by grafting a mixture of radically polymerizable unsaturated monomers onto a partially unsaturated hydroxy functional polyester.

There is no mention in Buter that a preformed copolymer **A** containing acid groups, of olefinically unsaturated monomers, is condensed with a hydroxyl-group containing polyester **B** derived from aliphatic dibasic and monobasic carboxylic acids, at a temperature of from 100 °C to 220 °C. The polymers of Buter are the commonly known graft copolymers, having an alkyd main chain, and graft branches from olefinically unsaturated monomers, which are connected to the polymer main chain via carbon-carbon bonds, as is usual in such graft polymerization reactions. The condensation resins **AB** of the present invention are, however, connected by an ester bond formed under formation of water, in the condensation reaction between the hydroxyl-group containing polyester, **B**, and the acid groups-containing polymer **A**.

In section [0041] of Buter the process used in the formation of the polyester-polyacrylate hybrid polymers is distinctly described and explained, as an addition polymerisation of radically polymerisable monomers in the presence of the partially unsaturated hydroxy functional polyester, wherein "the addition polymer is linked to the polyester resin by means of grafting onto the unsaturated groups of the polyester".

As can be shown from a textbook ("Polymer Chemistry" by Bruno Vollmert, New York 1973, copy of title page and pages 288 to 291 relating to graft copolymers, attached), the graft copolymer formed has a structure that implies a carbon-carbon bond obtained by grafting the acrylic monomers onto the unsaturation in the polyester of Buter.

The acid functional copolymers **A** and the hydroxy-functional polyesters **B** of the present invention, however, are linked in a condensation reaction wherein water is formed. This linkage is by an ester group.

The polymers of Buter are therefore of a structure different from the condensation products of the present invention. There is no teaching, suggestion or motivation in Buter to polymerise the acrylic monomers separately from the polyester, and to link the separately formed polymers together in a condensation reaction.

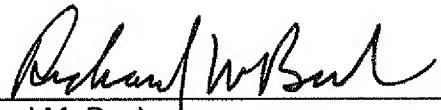
While it is mentioned, in section [0068] of page 6, of the Buter reference, that the base coat formed using the graft hybrid polymer of Buter may also comprise pigments, there is no mention that the hybrid polymers of Buter might be used as dispersing agents for pigments, and there is no mention that a coating formed with this hybrid polymer may have special corrosion protection properties.

For these reasons, the teaching of Buter does not render obvious the present invention as specifically defined in amended claims 1 to 4 and 6 to 7. Withdrawal of this ground of rejection is respectfully requested.

Conclusion

It is therefore believed that the subject matter of the present invention as now claimed is neither anticipated nor rendered obvious by the cited prior art, taken alone or in combination with one another, and favorable reconsideration is respectfully requested.

Respectfully submitted,

By 
Richard M. Beck

Registration No.: 22,580
CONNOLLY BOVE LODGE & HUTZ LLP
1007 North Orange Street; P.O. Box 2207
Wilmington, Delaware 19899
(302) 658-9141
(302) 658-5614 (Fax)
Attorney for Applicant

672851